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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,241	09/30/2003	Ronald D. Shinogle	08350.3146	5392

7590 04/29/2004

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EXAMINER	
RIDDLE, KYLE M	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 04/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/673,241	SHINOGLE, RONALD D.	
	Examiner	Art Unit	
	Kyle M. Riddle	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7,10,11,13-19,21-28,31 and 32 is/are rejected.

7)☒ Claim(s) 8,9,12,20,29,30 and 33 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 30 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

- Page 16, paragraph 64, line 4 of the paragraph, "patter" should read --pattern--;

- Page 18, paragraph 69, line 1 of the paragraph, last word, "an" should read --a--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 5, 13-17, 19, 22, 23, 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Funke et al. (U.S. Patent 6,601,563).

Re claims 1, 13, 14, and 22, Funke et al. disclose a compression release brake actuator comprising:

- an engine block 14 defining a plurality of cylinders 20 having pistons 24 slidably disposed therein (column 4, lines 10-15);

- a crankshaft 18 operatively connected to the piston 24 and camshaft 36 to synchronize timing between the piston 24 and camshaft 36 (column 4, lines 50-67 with column 5, lines 1-3, and Figures 2-5);

- intake and exhaust valves 30, 32 movable between an open and closed position (column 4, lines 30-38);

- a camshaft 36 of mechanical system 48 operatively connected to move the intake and exhaust valves 30, 32 between the closed and open positions (column 4, lines 43-46) in a predetermined or fixed geometry pattern (column 5, lines 19-21);

- a brake or valve actuator 60 operatively connected to the exhaust valve 32 to change the valve lift from the predetermined pattern (column 5, lines 52-59);

- the valve actuator 60 having an electrically actuated control valve 72 such as a piezo electric device (column 6, lines 32-35);

- a controller 64 connected to the piezo electric control valve 72 to operate the exhaust valve 32 in the desired lift actuation pattern based on sensors 62 to include piston position (column 6, lines 3-12, lines 18-21, lines 36-41).

Re claims 2, 4, 15, 16, 19, 23, and 25, Funke et al. disclose a valve actuator comprising:

- an actuator housing or body 66 with a slidably connected piston or plunger 68 movable between a retracted and extended position by a source of pressurized fluid 70 to engage the exhaust valve 32 to stop or position the lift pattern (column 6, lines 22-30);

- the piezo electric control valve 72 controlling the pressurized flow of fluid to the valve actuator 60 to cause movement of plunger 68 (column 6, lines 35-42).

Re claims 5, 17, and 26, Funke et al. disclose a valve actuator comprising:

- a tank adapted to store a supply of fluid (Figure 2);

- a source of fluid 70 connected to the tank and piezo electric control valve 72 for actuating the valve actuator 60 (column 6, lines 44-53 and Figure 2);

- the piezo electric control valve 72 between the tank and the plunger 68 of body 66, the control valve 72 being operable to allow the pressurized flow of fluid 70 to extend plunger 68 to move or prevent the exhaust valve 32 from returning to a closed position, or blocking the flow of fluid to allow the exhaust valve 32 to close (column 7, lines 56-65 and Figure 2).

4. Claims 1, 13, 14, and 22 are further rejected under 35 U.S.C. 102(b) as being anticipated by Nohira (U.S. Patent 4,696,265).

Nohira discloses a valve timing and lift device comprising:

- an engine block with multi-cylinders 20 having pistons 24 slidably disposed therein (column 6, line 61 and Figures 1 and 9);

- a crankshaft with a crank angle sensor 17 operatively connected to the piston and cam 14 to synchronize timing between the piston and camshaft (column 5, lines 9-14, lines 39-66, and Figures 1 and 4-9);

- a poppet valve 1 movable between an open and closed position (column 3, lines 59-66);

- a cam 14 operatively connected to move the poppet valve 1 between the closed and open positions through valve lifters 5, 6 in a predetermined or fixed geometry pattern (column 3, lines 67-68 with column 4, lines 1-13 and Figures 5-8);

- a valve actuator or lifters 5, 6 with oil chamber 15 (column 4, lines 4-13) operatively connected to an electrically actuated control valve 100 using piezo elements (column 4, lines 27-42);

- an electrical control unit 16 (ECU) connected to the piezo control valve 100 to operate the poppet valve 1 in the desired timing and lift actuation patterns (column 6, lines 14-42) based

on various sensors 62 to include crank angle sensor 17, compression top dead center sensor 20, and various engine operating condition detecting sensors (column 5, lines 7-19).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3, 6, 7, 10, 11, 18, 21, 24, 27, 28, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funke et al. in view of Moloney (U.S. Patent 4,593,658).

Funke et al. disclose a compression release brake actuator comprising a crankshaft to synchronize timing between the piston and camshaft, a camshaft operatively connected to move intake and exhaust valves between an open and closed position in a predetermined or fixed geometry pattern, a valve actuator operatively connected to the exhaust valve to change the valve lift from the predetermined pattern, the valve actuator having an electrically actuated control valve such as a piezo electric device, a controller connected to the piezo electric control valve to operate the exhaust valve in the desired lift actuation pattern based on sensors, an actuator housing or body with a slidably connected piston or plunger movable between a retracted and extended position by a source of pressurized fluid to engage the exhaust valve to stop or position the lift pattern, the piezo electric control valve controlling the pressurized flow of fluid to the valve actuator to cause movement of plunger, the piezo electric control valve being operable to allow the pressurized flow of fluid to extend plunger to move or prevent the exhaust valve from

returning to a closed position, or blocking the flow of fluid to allow the exhaust valve to close. They, however, fail to disclose the specific arrangements of one or more piezo electric devices.

Re claims 3, 7, 18, 24, and 28, Moloney teaches a valve operating mechanism by applying voltages to two piezo electric devices 13, 14 to control fluid pressure in an opposing manner for the actuation of valve 15 (column 2, lines 23-28, lines 56-68 with column 3, lines 1-2, and Figure 2).

Re claims 6, 10, 27, and 31, Moloney teaches providing a single-acting ram control (one piezo electric controlled fluid pressure line) with a mechanical biased return spring 42 (column 4, lines 39-42 and Figure 2).

Re claims 11, 21, and 32, Moloney teaches a valve operating mechanism using a piezo electric device 1 directly engaging lever arm 6 through operating pin 5 for direct actuation of valve 12 (column 2, lines 1-14 and Figure 1).

It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Moloney in the valve actuator of Funke et al., since the use thereof would have provided varying fluid pressure control means or direct control of the engaging piston eliminating the need for a fluid system.

Allowable Subject Matter

7. Claims 8, 9, 12, 20, 29, 30, and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of 1 patent.

- Kammerdiener et al. (U.S. Patent 6,655,329) disclose a piezoelectric control element for controlling the valve lift via a tappet.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (703) 306-3409. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kyle M. Riddle
Examiner
Art Unit 3748

kmr

THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700